

What is claimed is:

1. An apparatus for processing a substrate, comprising:  
a plurality of solution supply tanks for individually  
5 holding a plurality of solutions, respectively, to be mixed into  
a processing liquid, said solution supply tanks having respective  
temperature regulators;

a mixing tank connected to said solution supply tanks for  
mixing the solutions supplied respectively from said solution  
10 supply tanks into the processing liquid, said mixing tank having  
a temperature regulator; and

a processing bath connected to said mixing tank for  
processing the substrate by bringing the substrate into contact  
with the processing liquid which is introduced from said mixing  
15 tank into the processing bath.

2. An apparatus according to claim 1, further comprising:  
a heat-insulating unit for keeping the processing liquid  
in said processing bath at a predetermined temperature.

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3. An apparatus according to claim 1, wherein said mixing  
tank has a stirrer for stirring and mixing the solutions supplied  
to said mixing tank.

25 4. An apparatus according to claim 1, wherein said processing  
bath has a stirrer for stirring the processing liquid introduced  
into said processing bath.

5. An apparatus according to claim 1, wherein said processing liquid comprises an electroless plating solution.

5        6. An apparatus for processing a substrate, comprising:  
a plurality of solution supply tanks for individually holding a plurality of solutions, respectively, to be mixed into a processing liquid;

aplurality of mixing tanks connected to said solution supply  
10 tanks for mixing the solutions supplied respectively from said solution supply tanks into the processing liquid;

a processing bath connected to said mixing tanks through respective processing liquid supply passages for processing the substrate by bringing the substrate into contact with the  
15 processing liquid which is introduced from said mixing tanks into the processing bath;

aplurality of stop valves disposed in said processing liquid supply passages, respectively; and

a controller for controlling said stop valves to selectively  
20 open and close said processing liquid supply passages.

7. An apparatus according to claim 6, wherein said solution supply tanks have respective temperature regulators and said mixing tanks have respective temperature regulators, said  
25 apparatus further comprising:

a heat-insulating unit for keeping the processing liquid in said processing bath at a predetermined temperature.

8. An apparatus according to claim 6, wherein said controller controls said stop valves such that while the processing liquid produced in one of said mixing tanks is being supplied to said processing bath, another one of said mixing tanks is prepared to supply the processing liquid to said processing bath.

9. An apparatus according to claim 6, wherein said mixing tanks have respective stirrers for stirring and mixing the solutions supplied to said mixing tanks.

10. An apparatus according to claim 6, wherein said processing bath has a stirrer for stirring the processing liquid introduced into said processing bath.

11. An apparatus according to claim 6, wherein said processing liquid comprises an electroless plating solution.

12. An apparatus for processing a substrate, comprising:  
a plurality of solution supply tanks for individually holding a plurality of solutions, respectively, to be mixed into a processing liquid, said solution supply tanks having respective temperature regulators;

a processing bath connected to said solution supply tanks for processing the substrate by bringing the substrate into contact with the processing liquid which is produced by mixing the solutions supplied respectively from said solution supply tanks;

a heat-insulating unit for keeping the processing liquid in said processing bath at a predetermined temperature; and metering device for supplying said solutions in amounts required to produce said processing liquid to said processing bath.

13. An apparatus according to claim 12, wherein said processing bath is arranged to introduce the solutions supplied from said solution supply tanks, tangentially into the processing bath thereby to mix the introduced solutions into the processing liquid.

14. An apparatus according to claim 12, wherein said processing bath has a stirrer for stirring the processing liquid introduced into said processing bath.

15. An apparatus according to claim 12, wherein said processing liquid comprises an electroless plating solution.

16. An apparatus for processing a substrate, comprising:  
a processing bath for processing the substrate by bringing the substrate into contact with a processing liquid which is produced by mixing a plurality of solutions; and

a heat-insulating tank for holding the processing liquid in said processing bath at a predetermined temperature with a thermal medium comprising a liquid.

17. An apparatus according to claim 16, further comprising:  
a heated liquid supply tank for storing and heating the  
liquid as said thermal medium;

wherein said heat-insulating tank and said heated liquid  
5 supply tank are connected to each other for circulating the heated  
liquid as said thermal medium therebetween.

18. An apparatus according to claim 16, wherein said  
processing liquid comprises an electroless plating solution.

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19. A method of processing a substrate with an apparatus  
having a plurality of mixing tanks for individually introducing  
therein a plurality of solutions and mixing the solutions into  
a processing liquid, and a processing bath connected to said mixing  
15 tanks for processing the substrate by bringing the substrate into  
contact with the processing liquid which is introduced from said  
mixing tanks into the processing bath, said method comprising:

introducing the processing liquid from one of said mixing  
tanks into said processing bath; and

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switching the connection between said mixing tanks and said  
processing bath to introduce the processing liquid from another  
one of said mixing tanks into said processing bath depending on  
a state of the processing liquid in said one of the mixing tanks.

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20. A method according to claim 19, wherein the connection  
between said mixing tanks and said processing bath is switched  
either when the amount of the processing liquid in the mixing  
tank which is introducing the processing liquid into said

processing bath has reached a predetermined level, or when the processing liquid in the mixing tank which is introducing the processing liquid into said processing bath has processed a predetermined number of substrates.

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21. A method according to claim 19, wherein said processing liquid comprises an electroless plating solution.

22. An apparatus for processing a substrate, comprising:  
10 a processing head for processing the substrate by bringing the substrate into contact with a processing liquid supplied to and held in the processing head, said processing head having a substrate holder for holding the substrate;

a heat-insulating tank surrounding said substrate holder  
15 in a water-tight manner, for holding the processing liquid held in said processing head together with said substrate holder at a predetermined temperature with a thermal medium; and

a processing liquid supplying system for supplying the processing liquid at a predetermined temperature to said  
20 processing head.

23. An apparatus according to claim 22, further comprising:  
a processing liquid retrieving system for retrieving the processing liquid which has been used to process the substrate  
25 from said processing head and returning the retrieved processing liquid to said processing liquid supplying system.

24. An apparatus according to claim 22, wherein said processing head is arranged to hold the substrate with said substrate holder while a surface to be processed of the substrate is facing upwardly, and to define a processing bath for holding the processing liquid with said surface to be processed of the substrate and a seal ring for sealing an outer peripheral region of said surface to be processed of the substrate.

25. An apparatus according to claim 22, further comprising:  
a hot water supply tank for holding a liquid as said thermal medium, said hot water supply tank having a temperature regulator, said heat-insulating tank and said hot water supply tank being connected to each other for circulating said thermal medium therebetween.

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26. An apparatus according to claim 22, further comprising:  
a heating head for contacting the processing liquid held in said processing head, thereby to heat the processing liquid.

27. An apparatus according to claim 26, wherein said heating head has a contact surface for contacting said processing liquid held in said processing head, said contact surface being tapered such that the distance between said contact surface and the surface of the processing liquid held in said processing head is progressively increased radially outwardly from the center of the contact surface.

28. An apparatus according to claim 22, wherein said processing liquid supplying system has a processing liquid supply tank for holding the processing liquid therein, said processing liquid supply tank having a temperature regulator and a stirrer  
5 for stirring the processing liquid held therein.

29. An apparatus according to claim 22, wherein said processing liquid supplying system has a processing liquid supply tank for holding the processing liquid therein, and a temperature  
10 regulating device for regulating the temperature of the processing liquid which is supplied from said processing liquid supply tank to said processing head.

30. An apparatus according to claim 23, wherein said  
15 processing liquid retrieving system has a temperature regulating device for regulating the temperature of the processing liquid which is returned from said processing head to said processing liquid supplying system.

20 31. An apparatus according to claim 22, wherein said processing liquid supplying system has a plurality of solution supply tanks for individually holding a plurality of solutions, respectively, to be mixed into a processing liquid, said solution supply tanks having respective temperature regulators, and a  
25 plurality of mixing tanks connected to said solution supply tanks for mixing the solutions supplied respectively from said solution supply tanks into the processing liquid, said mixing tanks having respective temperature regulators.



32. An apparatus according to claim 22, wherein said processing liquid supplying system has a plurality of solution supply tanks for individually holding a plurality of solutions, respectively, to be mixed into a processing liquid, and a plurality of mixing tanks connected to said solution supply tanks for mixing the solutions supplied respectively from said solution supply tanks into the processing liquid.

10 33. An apparatus according to claim 22, wherein said processing liquid comprises an electroless plating solution.